

# Haematological examination

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# Haematological examination

- Physical examination – inspection
- Lymphadenopathy
- Splenomegaly
  
- Special haematological examinations

# Physical examination – Inspection

- Skin and its appendices
  - Paleness: anaemia
  - Plethoric aspect: polyglobulia
  - Jaundice: haemolytic anaemia, pernicious anaemia
  - Thrombocytopenic purpura (petechia, ecchymosis, suffusion): thrombocytopenia
  - Skin infections: neutropenia (lack of pus!)
  - Iron deficiency: dry skin, koilonychia, brittle hair and nail, hair loss, itching

# Physical examination – Inspection

- Oral cavity, mucous membranes
  - Plummer-Vinson sy.: mucous membrane atrophy in iron deficient anaemia
  - Hunter's glossitis: vitamin B<sub>12</sub> deficiency
  - Petechia: thrombocytopenia
  - Gingiva hypertrophy: leukaemia
  - Aphthous stomatitis, angina: agranulocytosis, leukaemia
  - Confluent tonsillitis: mononucleosis sy.

# Lymphadenopathy

- Palpable – non-palpable
- Regional – generalized
  
- Size (soliter, conglomerate), speed of development
- Tenderness, pain
- Soft, thicken, hard
- Relation to the surrounding tissues (fixed pr mobile)
- Fluctuation, abscess/fistula formation
- „Mass effect” (VCS sy., tracheal/bronchial obstruction, bowel obstruction, DVT)

# Palpable lymphadenopathy

## **Most common causes of lymphadenopathia based on its location**

### ***Cervical***

- Bacterial infection
- Mononucleosis sy.
- Rubella
- Tuberculosis
- Lymphoma (frequently unilateral)
- Head-neck tumors (frequently unilateral)

### ***Supraclavicular***

- Lung, retroperitoneal or gastrointestinal tumors
- Lymphoma
- Chest or retroperitoneal bacterial or fungal infection

### ***Axillary***

- Bacterial infection, trauma of upper extremity
- Cat scratch disease
- Lymphoma
- Breast cancer
- Brucellosis
- Melanoma

### ***Inguinal***

- Bacterial infections of lower extremity, genitals or parianal region
- Lymphoma
- Pelvic tumors
- Venereal diseases (lymphogranuloma venereum, syphilis I.)

# Non-palpable and generalized lymphadenopathy

## ***Hilar***

- Sarcoidosis
- Tuberculosis
- Lung cancer

## ***Mediastinal***

- Mononucleosis sy.
- Sarcoidosis
- Tuberculosis
- Histoplasmosis
- Lung cancer
- Lymphoma

## ***Abdominal/retroperitoneal***

- Tuberculosis
- Lymphoma
- Germinal tumors/seminoma
- Other tumors

## ***Generalized lymphadenopathy***

- Infection (EBV, CMV, toxoplasmosis, tuberculosis, hepatitis, syphilis, HIV/AIDS, histoplasmosis)
- Haematological malignancies: lymphomas, CLL, myeloid disorders: acut and chronic myelomonocytic leukaemia
- Drug reactions
- Other

# Lymphadenopathy

## Causes of lymphadenopathy

### I. Infectious

- Viruses: mononucleosis sy.(EBV, CMV, HIV), hepatitis infectiosa, herpes simplex, rubella
- Bacterias: Streptococcus, Staphylococcus, Brucella, *Francisella tularensis*, *Treponema pallidum*, Chlamydia, mycobacterias
- Fungi: histoplasmosis, coccidiomycosis
- Parazites: toxoplasmosis, leishmaniasis, trypanosomiasis

### II. Malignant disorders

- Primary hematological disorders: lymphomas; myeloid disorders (acute and chronic myelomonocytic leukaemia)
- Solid tumor metastases

### III. Disorders with immunopatomechanism

- Autoimmun disorders: SLE, RA, MCTD, Sjögren-sy., vasculitis
- Sarcoidosis

### IV. Storage diseases Gaucher, Niemann–Pick-, Fabry-, Tangier-disease

### V. Endocrin disorders (lymphoid hyperplasia)

Hyperthyreosis

### VI. Other rare disorders

- Castleman disease
- Kikuchi disease
- Histiocytosis
- Dermatopathic lymphadenitis
- Mucocutan lymphnode sy.(Kawasaki disease)



# Splenomegaly

- Palpation, percussion, auscultation
- Size, tenderness, pain
- Soft, thicken, hard
  
- „Hypersplenism” – pancytopenia due to sequestration

# Splenomegaly

- Portal hypertension
  - Liver cirrhosis
  - Hepatic, portal or splenic vein thrombosis
- Storage disorders
  - Gaucher, Niemann-Pick
- Systemic diseases
  - Sarcoidosis, amyloidosis, RA
- Infections
  - Acute
    - Sepsis, IE, typhus abdominalis, Mononucleosis sy.
  - Chronic
    - Tuberculosis, brucellosis, syphilis, malaria, leishmaniasis, schistosomiasis

# Splenomegaly

- Haematological disorders
  - Haemolysis (RES hyperplasia): thalassaemia major and intermedia, sickle cell anaemia, any type of haemolytic anaemia
  - Malignancies
    - Lymphoid: CLL, HCL, Lymphoma, ALL
    - Myeloid: CML, MF, PRV, AML
    - (Metastases of solid tumors)

# Useful laboratory tests

## **General**

- CBC, reticulocyte
- Peripheral blood smear MGG: cytomorphology
- ESR, CRP
- EPO

## **Iron deficiency**

- SeFe, Tf, Sat, SolTfR, Ferritin

## **Megaloblastic anaemia**

- B<sub>12</sub>, folsav

## **Haemolysis**

- SeBi, LDH
- Direct Coombs, irregular antibodies
- Haptoglobin, plasma free haemoglobin
- HgbELFO
- RBC enzyme activity

## **Blood loss**

- Stool benzidin test, urine sediment

## **Plasma cell dyscrasia**

- Total protein, ELFO, immunelfo, quantitative Ig

# Useful haematopathological exams

- Bone marrow aspiration, biopsy & Lymphnode biopsy
  - Cytomorphology, histology
  - Immunohistochemistry
  - Flow cytometry
  - Cytogenetics (metaphase analysis, FISH)
  - Molecular genetic

*FNAB of lymphnodes is not recommended!*

Sometimes other organs (skin, stomach, bowel, spleen) for these examinations

# Imaging techniques

- Xray (bone laesions of MM)
- US
- CT
- MRI
- Gallium scan
- PET/CT